

WMATA: The major public transit provider in the nation's Capital region

- Second largest rail system, 842 rail cars, growing to 1,014
 - Average daily ridership: 650,000

- Fifth largest bus system, 1,472 active fleet
 - Average daily ridership: 510,000



Metrobus System Overview

- 10 Garages
 - 4 in DC
 - 3 in VA
 - 3 in MD
- 1,472 Buses, ranging in size from 26 to 60 feet, Diesel and CNG

- 164 CNG buses in operation
- 3,628 Employees
- 344 Routes
- 49,809,000 total miles annually



Why CNG at WMATA?

The Washington D.C. region is a serious nonattainment area for Nitrogen Oxides (N0x) emissions. Estimates are that motor vehicle emissions of N0x will exceed the limits specified in the region's federally mandated air quality plan set for 2005.



Why CNG at WMATA?

- WMATA planned to purchase about 200 buses in 2000 and 2001.
- The WMATA Board of Directors wished to take a proactive approach to reduce pollution.
- The Board asked for a workshop on all available bus technologies to make an informed purchasing decision.



Alternative Fuels Workshop July, 2000

- Topics included air pollution, asthma, methods of reducing diesel emissions, other transits' experiences with hybrid electric and CNG buses, and the development of fuel cells.
- Speakers were from FTA, EPA, DOE, APTA, DC Health Dept, Sacramento, Toronto, New York, Montgomery County, MD, and Georgetown University.



Alternative Fuels Workshop Conclusions

- Several technologies could reduce N0x well below current diesel emission levels.
- Fuel cells appear to be the preferred technology of the future, but they are not yet generally available, nor proven.
- Hybrid Electric buses were available, but not yet proven.



Alternative Fuels Workshop Conclusions

- Diesel buses with newer engines, using ultra low sulfur diesel and exhaust aftertreatments, will significantly reduce most pollutants, but not N0x.
- The proven technology that produces the smallest amount of N0x is Compressed Natural Gas.



CNG at WMATA

In December 2000 and August 2001 the WMATA Board approved contracts to purchase a total of 164 low floor CNG buses.





CNG at WMATA

- Buses procured from New Flyer using Pierce Transit options
- Contract to install fueling station and modify existing
 50 year facility awarded to one contractor
- Service startup was scheduled for January 2002
- Extensive employee training and public relations and awareness programs were conducted
- A \$50,000 grant from the Federal Department of Energy was used to create video training and public relations tapes.



CNG Financial Commitment

- Initial costs
 - Buses: \$40,000 incremental cost over diesel
 - Facility: \$15.6 million
 - Annual Fueling Station Maintenance: \$250K
 - Annual Electrical Expense for Fueling Station: \$300K (est)





Gas pipeline



Filter Control Panel





CNG Dryers



CNG Storage Vessels





Increased Ventilation



Methane Gas Detectors











Fueling canopy







- Explosion proof lighting, a new heating system without open flames, complete air exchange four times per hour.
- Structural modifications, to fireproof and to isolate occupied building areas
- Upgraded electrical systems



Lessons Learned

- Facility contractor was experienced in fueling stations, not modifications
- Old building led to unknown problems (asbestos)
- Fire Marshall very conservative and unfamiliar with CNG
- Facility contract terminated and work managed in-house
- 10 buses began service in February 2002 and all 164 not in service until Fall 2002

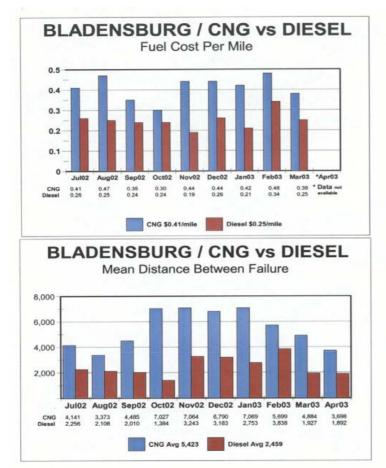


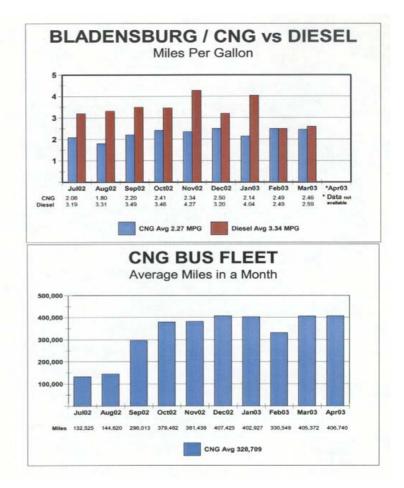
Experience with CNG

- No interruptions in the supply of fuel
- No major operational issues with the CNG component of the buses
- Great reception from operators, the community and the public



CNG Experience Summary Data







Emission reduction

• CNG buses are assigned to the most urban routes in the District of Columbia knowing that they are producing the lowest level of particulate matter (PM) and nitrogen oxides (NOx).



Emission reduction Diesel actions

- The Board of Directors approved expenditures on diesel emission programs
 - Switched to ultra low sulphur diesel in October 2001 reducing the sulphur content in the diesel to 17%
 - Authorized the addition of particulate filters to over 900 buses eligible for the filters
 - Authorized the repowering of 100 buses with engines meeting the EPA 2002 standard of 2.5 of NOx
 - Cummins is expending \$1.95M on after treatment devices on 200 buses and further testing



The Future of CNG at WMATA

- The Board of Directors:
 - In October 2002, authorized the conversion to CNG of the 1930's era Four Mile Run facility in Virginia and approved a \$22 million budget for the conversion.
 - In April 2003, authorized the bidding process for 175 CNG buses from FY 2003-04 funds with options for 250 additional buses in FY 2005-08
 - Approved a third CNG facility in one of the Maryland garages that is projected to come on line in FY 2008



CNG vs L/CNG at Four Mile Run

- Three mile pipeline or LNG storage
- Community Concerns
- Multi-year consideration



The Future of CNG at WMATA

- WMATA's goal is to buy buses that use proven technology with the greatest air quality benefit. CNG buses currently meet this goal.
- WMATA will continue to evaluate, and desires to operate, buses that meet its goal. In WMATA's view hybrid buses are a possible bridge to the ultimate, zero emission buses.



Summary

- The Washington DC area has compliance issues with emissions
- WMATA is doing its part to expand rail service and modify its bus fleet to provide significantly cleaner vehicles and looks forward to being truly a



